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# A Comprehensive Review on Herbal Remedies of Diuretic Potential

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## ABSTRACT:

Herbal medicines derived from plant extracts are being progressively more utilized to treat a variety of clinical diseases, though relatively little knowledge about their mode of action is available. There is increasing interest in the health and wellness benefits of herbs and botanicals. This is with good reason as they might offer a natural safeguard against the development of certain conditions and be a putative treatment for some diseases. One such area may be the lowering of blood pressure in those where it is elevated. One class of clinical medicines used to lower blood pressure are known as diuretics and work by increasing the excretion of urine from the body as well as the amount of sodium in urine. There are a growing number of studies purporting diuretic effects with traditional medicines. Any substance that tends to increase the flow of urine, which causes the body to get rid of excess water, is known as diuretic drugs. Substances that induce "diuresis," or the removal of fluids from the body through urination, are considered diuretics. These agents were widely explored in Indian ancient system of medicine. Diuretics increase the rate of urine outflow and sodium excretion and are used to adjust the volume and composition of body fluids in a variety of clinical situations including hypertension, heart failure, renal failure, nephritic syndrome and cirrhosis. The aim of this review is to abridge the work on diuretics of herbal origin.

**KEYWORDS:** Diuretics, Mechanism of action of diuretics, Herbal sources

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## 1. INTRODUCTION:

Knowledge of herbs has been handed down from generation to generation for thousands of years. Herbal drugs constitute a major part in all traditional systems of medicines[1]. Numerous types of herbs have been well recognised and catalogued by botanist from the high ranges of the Himalayan tract up to the sea-shores of Kanyakumari[2]. According to WHO nearly 80 % of the global population still rely upon the herbal drugs for their primary health care. There has been an increase demand for the pharmaceutical products from the natural origin in all over the world because of their lesser side effects as compare with the modern system of medicine. Ayurveda, literally meaning the "science of life and longevity" in ancient Sanskrit, is the one of the oldest healing system of India, based on lifestyle, diet and herbs. Ayurvedic herbal medicines mainly based on plants enjoy a respective position today, especially in the developing countries, where modern health services are limited[3].

Diuretics are drugs that increase the rate of urine flow, sodium excretion and are used to adjust the volume and composition of body fluids in a variety of clinical situations. Drug-induced diuresis is beneficial in many life-threatening disease conditions such as congestive heart failure, nephritic syndrome, cirrhosis, renal failure, hypertension, and pregnancy toxaemia[4]. These also play an important role in hypertensive patients, pulmonary congestion, this decreases cardiac work load, oxygen demand, plasma volume, thus decreasing blood pressure & also treat the acute and chronic renal failure, hypercalciuria, cirrhosis of liver[5]. Most diuretic drugs have the adverse effect on quality of life including impotence, fatigue, and weakness. Naturally occurring diuretics include caffeine in coffee, tea, and cola, which inhibit Na+ reabsorption and alcohol in beer, wine and mixed drinks, which inhibit secretion of Anti-Diuretic Harmones[6].

## 2. FIGURE SHOWING MECHANISM OF ACTION OF DIURETICS

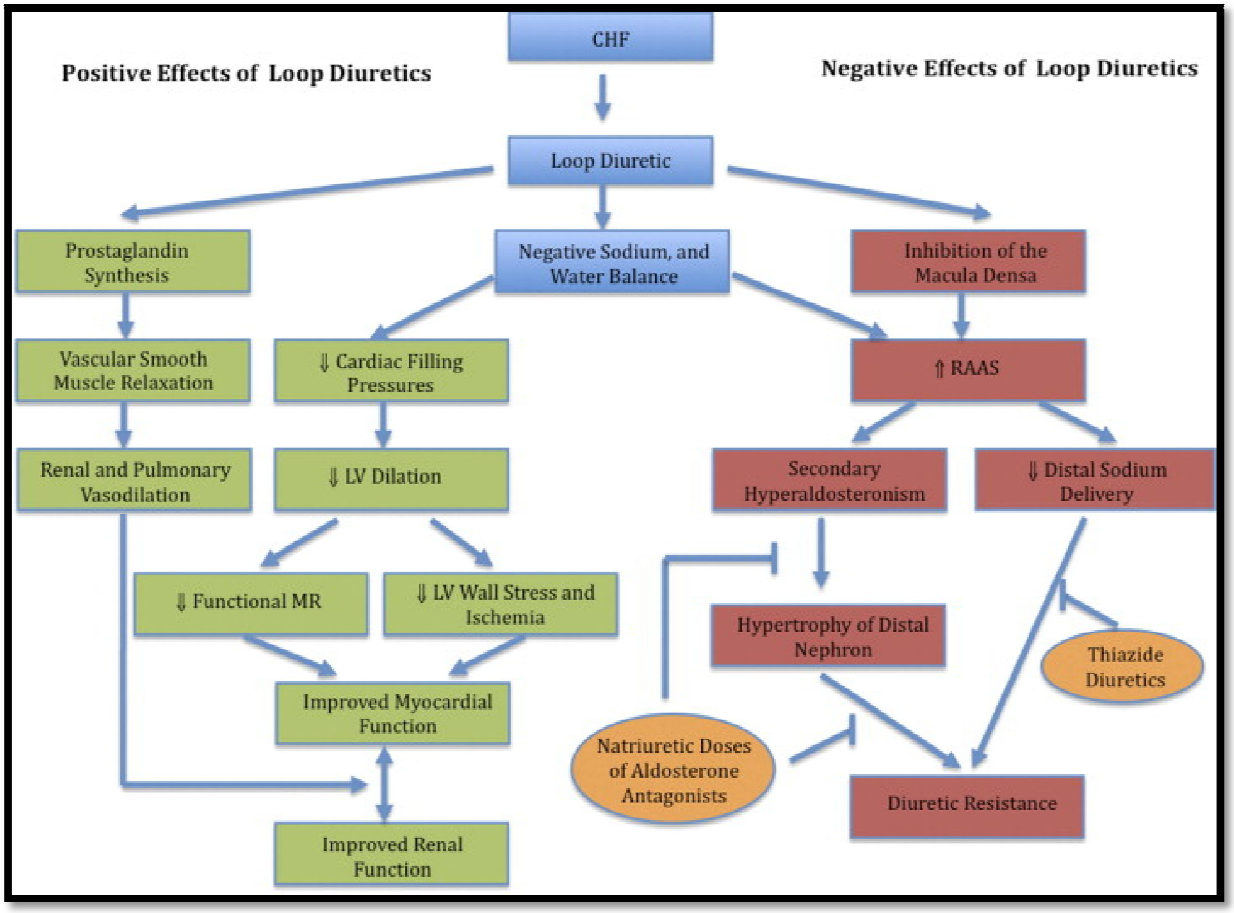


**Fig.2: Mechanism of Diuretic drugs[7].**

## 3. LIST OF HERBAL SOURCES POSSESSING DIURETIC ACTIVITY:

| S. No | Botanical Name & Family | Part Used | Extract Used | References |
|---|---|---|---|---|
| **1.** | *Alocasia macrorrhiza* Linn. Araceae | Leaves | Ethanolic | 8 |
| **2.** | *Acacia suma* (Roxb) Fabaceae | Barks | Aqueous | 9 |
| **3.** | *Abelmoschus moschatus* Medikus Malvaceae | Leaves | Petroleum ether, Chloroform, Alcohol | 10 |
| **4.** | *Abutilon indicum* Linn Malvaceae | Seeds | Aqueous | 11 |
| **5.** | *Acacia sinuate* Mimosaceae | Pods | Ethanolic and methanolic | 12 |
| **6.** | *Avicennia officinalis* L. Avicenniaceae | Leaves | Methanolic | 13 |

| | | | | |
|---|---|---|---|---|
| **7.** | *Asparagus racemosus* Liliaceae | Roots | Aqueous | 14 |
| **8.** | *Barleria prionitis* Linn Acanthaceae | Flower | Aqueous | 15 |
| **9.** | *Benincasa hispida* Cucurbitacea | Fruit rind | Chloroform | 16 |
| **10.** | *Boerhaavia Diffusa* Nyctaginaceae | Stem and leaves | Alcoholic | 17 |
| **11.** | *Cynodon dactylon* Graminae | Root stalk | Aqueous | 18 |
| **12.** | *Cocos nucifera* Arecaceae | Husk | Aqueous and alcoholic | 19 |
| **13.** | *Costus speciosus* Linn. Zingiberaceae | Rhizomes | Aqueous and alcoholic | 20 |
| **14.** | *Centella asiatica* Mackinlayaceae | Leaves | Methanolic and ethanolic | 21 |
| **15.** | *Cleome rutidosperma* D.C. Capparidaceae | Whole plant | Aqueous | 22 |
| **16.** | *Cerbera odollam* Gaertn Apocynaceae | Roots | Methanolic | 23 |
| **17.** | *Derris trifoliata* Lour Leguminosae | Aerial parts | Ethanol | 24 |
| **18.** | *Hygrophila auriculata* (Schum) Heine Acanthaceae | Whole plant | Alcoholic | 25 |
| **19.** | *Holarrhena antidysenterica* Apocynaceae | Seeds | n-hexane, butanol, aqueous | 26 |
| **20.** | *Kigelia pinnata* Bignoniaceae | Bark | Aqueous | 27 |
| **21.** | *Lepidium sativum* Cruciferae | Dried seeds | Aqueous and methanol | 28 |
| **22.** | *Lagenaria siceraria* Cucurbitaceae | Fruit | Juice extract and methanol | 29 |
| **23.** | *Mimusops elengi* Sapotaceae | Bark | Ethyl acetate, ethanol and water | 30 |
| **24.** | *Musa paradisiaca* L Musaceae | Roots | Methanolic | 31 |
| **25.** | *Mimosa pudica* Linn. Fabaceae | Leaves | Aqueous | 32 |
| **26.** | *Mangifera indica* L. Anacardiaceae | Bark | Ethyl acetate, ethanol and water | 33 |
| **27.** | *Morinda citrifolia* (Linn) Rubiaceae | Fruit | Juice | 34 |
| **28.** | *Macrotyloma uniflorum* Fabaceae | Seeds | Ethanolic | 35 |
| **29.** | *Nicandra Physalodes* Solanaceae | Leaves | Alcoholic and aqueous | 36 |

| | | | | |
|---|---|---|---|---|
| **30.** | *Nothosaerva brachiata* Wight Amaranthaceae | Roots | Aqueous and ethanol | 37 |
| **31.** | *Pseudarthria viscida* L. Fabaceae | Aerial part | Ethanolic | 38 |
| **32.** | *Phyllanthus fraternus* Web Euphorbiaceae | Arial part | Methanolic | 39 |
| **33.** | *Raphanus sativus* Brassicaceae | Bark | Aqueous | 40 |
| **34.** | *Ruta graveolens* L. Rutaceae | Leaves | Hot water infusion | 41 |
| **35.** | *Rumex vesicarius*. Linn Polyganaceae | Aerial parts | Ethanolic | 42 |
| **36.** | *Salvia officinalis* L. Labiatae | Leaves | Methanolic | 43 |
| **37.** | *Spilanthes acmella* Compositae | Leaves | Petroleum ether, chloroform and alcohol | 44 |
| **38.** | *Sesbania grandiflora* Linn Leguminosae | Flower | Aqueous and methanol | 45 |
| **39.** | *Solanum surattense* burm Solanaceae | Whole plant | Alcoholic and aqueous | 46 |
| **40.** | *Withania coagulans* Dunal Solanaceae | Fruit | Aqueous | 47 |

## 4. DESCRIPTION OF FEW PLANT SOURCES:

### *Abelmoschus moschatus* Medikus[10]

The diuretic activity of Petroleum ether, Chloroform, Alcohol extract of *Abelmoschus moschatus Medikus* was studied and the activity was compared with furosimide as standard. The alcoholic extract exhibited significant diuretic activity as evidenced by increased total urine volume and the urine concentration of $Na^+$, $K^+$ and $Cl^-$.

### *Barleria prionitis* Linn[15]

Diuretic and Natriuretic activities were carried out by administration of normal saline along with the treatment modules. The volume of urine (in ml) and the $Na^+$ and $K^+$ content in the urine were measured. The extract at 100 and 200 mg / kg, produced significant diuresis and increased sodium elimination but not potassium.

***Boerhaavia Diffusa*[17]**

The extracts were administered to experimental rats orally at doses of 150 & 300mg/kg of alcoholic extracts of stem and leaves of *Boerhaavia diffusa* (AEBD) and 200 & 400mg/kg of leaves of *Anisochilus carnosus* (AEAC). Furosemide was used as a standard drug at a dose of 20mg/kg in the present study. The diuretic effect was evaluated by measuring urine volume, sodium and potassium content in urine.

***Cynodon dactylon*[18]**

Oral administration of the aqueous extract of root stalk of *Cynodon dactylon* at a dose of 100mg, 250mg, 500mg, 750mg/kg body weight shows diuretic activity which can be quantified in experimental rats.

***Cleome rutidosperma* D.C.[22]**

The diuretic activity was tested in rats at 400 and 600 mg/kg, orally and compared with furosemide (20 mg/kg, intraperitoneally) as the standard. The extract was found to possess significant dose dependent diuretic activity.

***Kigelia pinnata*[27]**

Different concentrations of KPB (250mg/kg, 500mg/kg) were orally administered to hydrated rats & their urine output was immediately measured after 5 hours of treatment. Frusemide (10mg/kg) was used as reference drug while normal saline (0.9%) solution was used as control. KPB exhibited dose dependent diuretic property.

***Mimosa pudica* Linn[32]**

The control group was given 0.9% NaCl, the 3 test groups were treated with aqueous extract of leaves of *M. pudica* in the doses of 100, 200 and 400 mg/kg respectively, and the standard group received furosemide. The aqueous extract of *M. pudica* leaves at 100 mg/kg p. o. showed significant diuretic activity with increased electrolytes excretion.

## 5. CONCLUSION

India has a rich collection of medicinal plants distributed in different geographical and ecological conditions widespread in the country. Plants have been used since ancient times for the treatment of

various diseases and disorders. The few herbal plants have been discussed which are previously explored by the various researchers for their Diuretic activity. By this review, it can be concluded that in the core of the nature there are so many plants which possess potent diuretic activity. Herbal medications are free from side effects and toxicity unlike the allopathic medicines. The current review projected to provide an overview of knowledge adjoining the herbal medicines used as diuretics.

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